



## CITY OF FORT BRAGG

*Incorporated August 5, 1889*  
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Fort Bragg, CA 95437  
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### SPECIAL MEETING AGENDA

Wednesday, October 20, 2010 / 6:00 p.m.

Meeting Place: Fort Bragg Town Hall – 363 N. Main Street, Fort Bragg, CA

#### NOTICE AND CALL OF SPECIAL MEETING OF THE FORT BRAGG CITY COUNCIL, FORT BRAGG REDEVELOPMENT AGENCY AND FORT BRAGG PLANNING COMMISSION:

NOTICE IS HEREBY GIVEN that a special meeting of the above agencies is hereby called to be held at the date and time listed above, or as soon thereafter as the matter can be heard, in Town Hall, 363 N. Main Street, Fort Bragg, California.

Said special meeting shall be for the purpose of:

#### MEETING CALLED TO ORDER

#### ROLL CALL

#### 1. STUDY SESSION

- A. Conduct Joint City Council/Redevelopment Agency/Planning Commission Work Session to Consider Conceptual Alternatives for Mill Pond Complex and Provide Direction to Staff

#### ADJOURNMENT

STATE OF CALIFORNIA        )  
  )ss.  
COUNTY OF MENDOCINO    )

I declare, under penalty of perjury, that I am employed by the City of Fort Bragg and that I caused this agenda to be posted in the City Hall notice case on October 15, 2010.

Cynthia M. VanWormer  
Cynthia M. VanWormer, CMC, City Clerk

#### NOTICE TO THE PUBLIC

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- Materials related to an item on this Agenda submitted to the Council/District/Agency after distribution of the agenda packet are available for public inspection in the lobby of City Hall at 416 N. Franklin Street during normal business hours.
- Such documents are also available on the City of Fort Bragg's website at <http://city.fortbragg.com> subject to staff's ability to post the documents before the meeting.

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## **CITY OF FORT BRAGG**

416 N. FRANKLIN, FORT BRAGG, CA 95437  
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**Meeting:** Fort Bragg City Council & Planning Commission Work Session  
**Topic:** Consider Conceptual Alternatives for the Mill Pond Complex  
**Date:** Wednesday, October 20, 2010 – 6:00 p.m. to 9:30 p.m.  
**Location:** Fort Bragg Town Hall

## **AGENDA**

- I. MEETING CALLED TO ORDER & AGENDA REVIEW**
- II. PRESENTATION**
  - 1. Overview of Mill Pond Complex**
  - 2. Overview of Planning & Implementation Process**
    - a. Overarching Goals:
      - i. Meet agency requirements
      - ii. Achieve City and community goals
      - iii. Achieve Georgia-Pacific/regulatory goals
    - b. Planning Framework and Objectives
    - c. Process & Timeline
  - 3. Principal Components for Development of Mill Pond Complex Alternatives**
    - a. Alder and Maple Creeks
    - b. North wall, dam, spillway and cribwall
    - c. Pond 8
    - d. Pond 5
    - e. OU-E lowland area
    - f. Beach berm
  - 4. OU-E Investigation Update**
  - 5. Aquatic Habitat Planning & Design Considerations**
  - 6. Summary of Conceptual Alternatives To Date**
- III. BREAK**
- IV. PUBLIC COMMENTS**
- V. CITY COUNCIL & PLANNING COMMISSION DISCUSSION OF CONCEPTUAL ALTERNATIVES**
- VI. SUMMATION & NEXT STEPS**

## MILL POND COMPLEX PLANNING FRAMEWORK

October 20, 2010

Georgia-Pacific (GP) and the City of Fort Bragg (City) are initiating a community planning process to identify and evaluate projects that effectively encompass the regulatory requirements for site remediation and dam safety compliance, protection of environmental resources and their beneficial uses (e.g., jurisdictional waters and environmentally sensitive habitat areas [ESHAs]), and the long-term plan the City and community of Fort Bragg have for the Mill Pond Complex area. Embarking on this complex collaborative process requires a strategic framework that establishes some basic concepts and understandings central to a successful planning effort. This memo represents an initial effort to define these concepts and understandings for discussion:

- The Mill Pond Complex Project will be accomplished in at least two phases of work. The actions in the first phase, which are necessary to address the dam safety issues, must be complete by 2015. This phase of work will encompass the rerouting of storm water, remediation of the Operable Unit E area (OU-E) including the Pond 6, 7 and 8 sediments, removal of the Mill Pond dam, spillway and crib wall, and associated mitigation and revegetation activities. Subsequent phases of work are anticipated to consist of actions necessary to implement the remainder of the City's long-term plan for the Mill Pond Complex. The later phase project(s) will be addressed at a programmatic level in the Specific Plan EIR, whereas the first phase projects will be addressed at a project-specific level of design.
- At the conclusion of this planning process, a preferred conceptual alternative and at least one feasible alternative will be defined for consideration in the Specific Plan EIR. Once the preferred alternative is established, then the projects necessary for the first phase of work can be designed to create a platform on which subsequent phase project(s) related to the City's long-term vision for the Mill Pond Complex can be based. A key objective of this planning process is to define the City's long-term vision for the Mill Pond Complex at a programmatic level to facilitate a first phase project design that will result in site conditions that facilitate subsequent phases and do not preclude or impede future actions to achieve the long-term vision.
- OU-E, and in particular the central portion of the Mill Pond Complex, contains many natural resources that are considered ESHAs under the Coastal Act. Many of these resources will be disturbed or lost in part or in full during the project implementation, which will require mitigation. Regulatory policies of the jurisdictional state and federal agencies generally require that mitigation be provided in-kind, preferably onsite, and within one year of project implementation. On a multiple year project, piecemeal in-kind mitigation may well lead to a disjointed and dysfunctional suite of restoration and mitigation projects that fail to achieve the

## MILL POND COMPLEX PLANNING FRAMEWORK

October 20, 2010

Mill Pond Complex project objectives and the community vision. To avoid this potential outcome, the ecological resources within OU-E should be viewed as a complex of related ESHAs. One of the Mill Pond Complex project goals should be the development of an integrated restoration and mitigation plan based on a holistic view of the Mill Pond Complex resources that allows flexibility in the timing, kind, location, and extent of mitigation required of the project.

- Investigation and remediation of site soil, sediment and groundwater is necessary to achieve site closure under the oversight of the Department of Toxic Substances Control (DTSC) and with input from the North Coast Regional Water Quality Control Board (NCRWQCB), other regulatory agencies, and the City. The remediation objectives and actions necessary to complete the first phase scope of work could differ from remedial actions that may be necessary under the subsequent phases of work to implement the long-term vision for the Mill Pond Complex.
- The planning process should consider and evaluate qualitatively each of the first phase alternatives with respect to the following factors for both: 1) the time period between the conclusion of the 2015 scope of work and implementation of the long-term vision; and 2) implementation of the long-term vision :
  - Stormwater management
  - Regulatory complexity and feasibility
  - Remedial requirements
  - Mitigation requirements
  - Long term operations and maintenance (O&M)
  - Ecological function
  - Implementation costs
  - Aesthetics
  - Public access

# PRELIMINARY MILL POND AREA AQUATIC HABITAT ALTERNATIVES

October 20, 2010

## **Purpose**

This document provides a brief conceptual description, and overview of potential benefits, constraints, permitting, and mitigation considerations for five potential aquatic habitat types in the Mill Pond Complex area. The intent is to provide decision makers, the community, and regulatory agencies, an initial overview of these concepts to facilitate discussion and evaluation of the alternatives. These five long-term habitat restoration concepts were suggested by City policy makers and the community in previous meetings. Additional research will be necessary to complete the feasibility analysis and answer a range of questions about these potential features.

## **1. Freshwater Wetland**

### **Description**

- Reroute Alder and Maple Creek drainages via Pond 8 East or directly through a swale or stream channel to a freshwater wetland in OU-E lowland area.
- The channel and wetland would require excavation in OU-E lowland with modification of the beach berm to allow discharge to Soldier Bay via a standpipe outfall or a box culvert.
- This alternative is intended to create a species-rich freshwater wetland consisting of shallow and deep water habitat, with seasonal expansion and shrinking of the water level and area covered.
- Coastal trail access could be provided across the beach berm, or via a pathway through or around the wetland (or a combination of these).

### **Potential Benefits**

- Provides aesthetically pleasing habitat area with seasonal conditions.
- Has potential for water quality improvement due to long residence time and dense vegetative coverage.
- Has potential to provide beneficial ecological functions and features.
- Accommodates public access.
- Potential additional educational/recreational value with seasonal path through wetland area.
- Relatively low maintenance requirements and moderate level of soil excavation required.

### **Constraints**

- Will require some excavation of OU-E lowland area to achieve sufficient water storage capacity and possibly mitigation requirements. Soils may be utilized on site or transported off site.
- May require additional ecological risk assessment preparation and remedial action.
- Mitigation requirements may require use of large portion of the lowland area.
- A wetland may place standing water on the inboard side of the beach berm periodically during and following storm events, which may require erosion protection.
- Steep gradient from upland OU-E (north of Pond 8) to lowland OU-E may require engineering controls for water flow, which would require maintenance (vegetation and debris removal).

### **Permitting and Mitigation Considerations**

- Wetland could meet all or some of the mitigation requirements for loss of freshwater wetlands, jurisdictional waters, and associated beneficial uses.
- Required permits include a U.S. Army Corps of Engineers 404 permit, a Section 401 Water Quality Certification from the Regional Water Quality Control Board (RWQCB), a California Department of Fish and Game (CDFG) Section 1602 (Fish and Game Code) Streambed Alteration Agreement, and a Coastal Development Permit from the City.
- This option was favorably reviewed by staff from participating resource agencies.

## **2. Daylight Streams**

### **Description**

#### **Maple Creek**

- Daylight Maple Creek from riparian area to Pond 8 (approximately 900 to 1000 feet).
- Daylight the stream channel from Pond 8E to the ocean, generating approximately 600 feet of open channel and replacing the current flow channel through Pond 8.
- Maple Creek could be daylighted from the Maple Creek riparian area to the beach berm generating approximately 2,200 feet of stream channel. This alternative would be developed in association with closure of Pond 8.

#### **Alder Creek**

- Daylight Alder Creek from the site boundary to Pond 8 (approximately 600 feet).
- Alder Creek could be daylighted from its point of entry to the site to the OU-E beach berm generating approximately 1,500 feet of stream channel.

#### **Maple and/or Alder Creek**

- In combination, daylighting Maple Creek and Alder Creek could generate approximately 3,100 feet of channel.
- Both creeks will require stable drainage slopes and adequate flood plains to accommodate a 100-year 24-hr storm event. Combined channel and flood plain widths would be 80 to 180 feet across (based on Stetson estimates) depending upon pond and channel configuration. At 3,100 feet in length and 180 in width, the stream channel habitat area would be approximately 12 acres.
- Create riparian habitat corridor and geomorphic flow control features (e.g., convex rock weirs, cross channel bars).
- Develop appropriate means to allow road and trail access across one or both stream channels.
- Construct a box culvert or other modification of the beach berm to allow out flow. Alternatives could include a culvert, partial removal or complete removal of the beach berm.

### **Potential Benefits**

- Restores historic stream channel, riparian habitat and beneficial uses (e.g., water quality improvement, aesthetics, recreation, riparian habitat) on daylighted Maple and/or Alder Creek.
- Creates effective riparian connections and “wildlife corridor” between the Maple Street Riparian area, adjacent open space, the mill pond, and lowland wetlands.
- Provides enhancement to existing Maple Creek drainage riparian area.
- Provides storm flow retardation during moderate and high flow conditions.
- Provides initial step in potential daylighting of other upstream portions of the creeks.

- Stream channel and riparian habitat created may be sufficient to replace existing water quality improvement beneficial use provided by Pond 8.

### **Constraints**

- May require extensive excavation of surface and near surface soils if soils are identified as contaminated. Currently no known contamination for Maple Creek daylighting. There is known contamination (MTBE fuel additive) from a third party offsite around portions of Alder creek drainage. Daylighting of Alder Creek drainage would require additional investigation, and may require ecological and human health risk assessment to establish compatible soil cleanup targets, and additional remediation.
- Daylighting Alder Creek to Pond 8 may limit the extent of residential land uses proposed for this area of the Specific Plan.
- If the streams are daylighted to the ocean and flow through a culvert in the beach berm, some excavation will be required to achieve a 2% grade from the 57 foot elevation at the Maple Street wetland to the 16 foot elevation at the beach berm.

### **Permitting and Mitigation Requirements**

- Will require a U.S. Army Corps of Engineers 404 permit, a Section 401 Water Quality Certification from the RWQCB, a CDFG Section 1602 (Fish and Game Code) Streambed Alteration Agreement, and a Coastal Development Permit from the City.
- Creation of stream channel, riparian habitat, and flood plain seasonal wetlands may be acceptable as mitigation for loss of Pond 8 and the OU-E Pond 6 and 7 remediation.
- If streams are daylighted to an estuary, an ESA Section 7 consultation with the National Marine Fisheries Service (NMFS) may be required regarding incidental take of listed Coho salmon and steelhead trout.
- This option was favorably reviewed by staff from participating resource agencies.

## **3. Shallow Estuary**

### **Description**

- Reroute Alder Creek and Maple Creek drainages and site runoff to a shallow estuary.
- The shallow estuary would require excavation in OU-E lowland with either full or partial removal of the beach berm to allow muted tidal action.
- This alternative is intended to create a shallow estuary with a seasonal sandbar beach berm with limited outflow during the dry season, and an open channel to Soldier Bay during the wet season.
- Coastal trail access would be provided either on a bridge over the estuary or a pathway around the estuary.

### **Potential Benefits**

- Provides aesthetically pleasing habitat area with seasonal conditions.
- Restores a portion of the historic and natural habitat associated with site (pre-mill conditions).
- Has potential to provide beneficial ecological functions and features (e.g., brackish marsh).



## **Constraints**

- If an estuary is combined with any of the design alternatives that retain Pond 8E, it may have to be small and designed so that it does not create a “jurisdictional” dam (greater than 25 feet in height) along the Pond 8E north wall when soil is removed to establish the estuary.
- If a larger estuary is created, tidal action and periodic flooding may cause erosion of the Pond 8 north wall.
- Will require extensive excavation - greater than 150,000 cubic yards (CY) - of OU-E lowland area to achieve elevations that allow tidal inundation - near 5 to 8 feet above mean sea level at the beach berm and to near sea level in portions of the OU-E lowland area. Soils may be utilized on site or transported off site.
- May require additional ecological risk assessment preparation and remedial action.
- Alder Creek and Maple Creek conveyance to the estuary may need to be adjusted to provide stable discharge to the estuary during winter flows and to control headward erosion.
- Beach berm height, as well as tidal and flow conditions are very dynamic and performance of the estuary is difficult to predict.
- Sustainability of the habitat is uncertain. A shallow estuary has the potential to provide beneficial ecological functions, but could also create significant ecological problems associated with poor water quality conditions in the summer and fall months. A shallow estuary may potentially trap marine fishes and other marine organisms.
- Coastal trail access will need to be routed around the entire mill pond area (although summertime access may be possible on the beach) or the project will require a pedestrian bridge.
- While it has the potential to generate conditions attractive to listed anadromous Coho salmon and steelhead trout, it would not provide access to spawning habitat.
- Will likely cause some change in sand deposition, tidal and subtidal habitat conditions in Soldier Bay (could be positive or negative).

## **Permitting and Mitigation Considerations**

- Need to determine whether the estuary would meet the mitigation requirements for loss of freshwater wetlands, jurisdictional waters, and associated beneficial uses. In-kind wetland mitigation might need to be provided elsewhere on the site.
- Required permits include U.S. Army Corps of Engineers 404 permit, a Section 401 Water Quality Certification from the RWQCB, a CDFG Section 1602 (Fish and Game Code) Streambed Alteration Agreement, and a Coastal Development Permit from the City.
- May require an ESA Section 7 consultation with the NMFS due to the potential for steelhead incidental take.

## **4. Deep Inlet Estuary**

### **Description**

- Alder Creek and Maple Creek drainages and site runoff routed to a deep inlet estuary.
- Inlet estuary excavated in OU-E lowland with full removal of the beach berm.
- Inlet would be open to full tidal action year round.
- Coastal trail access provided on bridge or around the estuary.

### **Potential Benefits**

- Provides aesthetically pleasing habitat area.
- Restores components of historic/natural habitat features of site.
- Once established, the estuary is likely to be a relatively stable habitat type, but may take a long time to develop sustainable ecological and hydrological functions.
- Eliminates coastal armoring (beach berm).

### **Constraints**

- An estuary may not be compatible with design alternatives that retain Pond 8E, due to the potential to create a jurisdictional dam.
- Requires extensive excavation of OU-E lowland area to achieve elevations at or below sea level that will allow tidal inundation (potentially greater than 500,000 CY). Current elevations in OU-E range from 18 to 37 feet above mean sea level.
- Tidal influx, wave action and periodic flooding may cause erosion of the shoreline, and the Pond 8 north wall if Pond 8 is retained. Armoring would be required in several areas to prevent erosion.
- Steep drainage slope from surrounding upland may cause bluff slope erosion associated with tidal action and stream channel incision.
- May require additional ecological risk assessment preparation and remedial action.
- Eliminates coastal armoring (beach berm) which may result in removal of the beach through wave action and estuary discharge.
- Elevations of Alder Creek and Maple Creek conveyance/daylighted streams to the estuary will need to be adjusted to provide stable discharge to the estuary during winter flows.
- Has the potential to generate conditions attractive to listed anadromous Coho salmon and steelhead trout, but would not provide access to spawning habitat.
- May change tidal and subtidal habitat conditions in Soldier Bay.

### **Permitting and Mitigation Considerations**

- Need to determine whether the estuary would meet the mitigation requirements for loss of freshwater wetlands, jurisdictional waters, and associated beneficial uses. In-kind wetland mitigation might need to be provided elsewhere.
- Required permits include U.S. Army Corps of Engineers 404 permit, a Section 401 Water Quality Certification from the RWQCB, a CDFG Section 1602 (Fish and Game Code) Streambed Alteration Agreement, and a Coastal Development Permit from the City.
- May require ESA Section 7 consultation with NMFS for Coho and steelhead incidental take.

## **5. Freshwater Lake**

### **Description**

- Reroute Alder Creek and Maple Creek drainages and site runoff to a freshwater lake in OU-E lowland area.
- The lake would require excavation in OU-E lowland while retaining and possibly fortifying/raising the height of the beach berm.
- A standpipe outfall would be constructed through the beach berm.

- The lake alternative is intended to create a body of open water fringed by emergent (wetland) vegetation. Coastal trail access could be provided along the beach berm. Water depths would be designed to limit growth of invasive aquatic plants.

#### **Potential Benefits**

- Provides aesthetically pleasing habitat area that can be attractive to a variety of birds and other wildlife.
- Has potential to provide beneficial ecological functions and features (e.g., freshwater lake with wetland fringe) and water quality improvement.
- Easy coastal trail access would be provided across the beach berm.

#### **Constraints**

- If the lake component is combined with any of the design alternatives that retain Pond 8E, the lake may have to be small and designed to avoid the creation of a “jurisdictional” dam (greater than 25 feet in height) along the Pond 8E north wall when soil is removed to establish the lake.
- A lake will place water on the inboard side of the beach berm permanently which likely increases the geotechnical concerns regarding stability of the beach berm, as well as long term maintenance requirements (e.g., shoreline and berm erosion).
- To generate lake depths that are attractive and do not support invasive plant growth such as parrot feather will require extensive soil excavation (greater than 100,000 CY), or the beach berm elevation would need to be raised. Soils may be utilized on site or transported off site.
- Discharge to Soldier Bay would likely require building a stand pipe outfall through the beach berm. A stand pipe outfall has higher maintenance requirements than a box culvert.
- Potentially limited water quality improvement due to limited vegetative cover and low inflow during the dry season.
- May require additional ecological risk assessment preparation and remedial action.
- Regular maintenance of the lake would be necessary to prevent open water areas from becoming vegetated.

#### **Permitting and Mitigation Considerations**

- Need to determine whether the lake would meet the mitigation requirements for loss of freshwater wetlands, jurisdictional waters, and associated beneficial uses.
- Required permits include U.S. Army Corps of Engineers 404 permit, a Section 401 Water Quality Certification from the RWQCB, a CDFG Section 1602 (Fish and Game Code) Streambed Alteration Agreement, and a Coastal Development Permit from the City.
- A water right is required to impound surface water for more than 30 days. It is anticipated that little or no outflow would occur during low flow summer months requiring that surface water be held well beyond 30 days.

Preliminary Mill Pond Complex Alternatives Matrix  
 October 20, 2010 Fort Bragg City Council & Planning Commission Work Session

MPC Preliminary Alternatives Matrix		Georgia-Pacific Goals		Project Constraints		Project Components Completed by 2015	Remaining Alternative Components <sup>3</sup>	Long-Term O&M <sup>4</sup>
Alternative (Figure Reference)	Alternative Description <sup>1,2</sup>	Dam Safety	Remediation <sup>2</sup>	Surface Water Diversion	Mitigation			
Alternative 1: Pond 8 Modification with Vegetated Swale/Wetland (Figure 1)	<ol style="list-style-type: none"> <li>1. Remediate Pond 6, Pond 7, OU-E soil a/o groundwater (as needed)</li> <li>2. Stabilize north wall</li> <li>3. Divert surface water via spillway and vegetated swale to (4 -6 acre) freshwater wetland in OU-E lowland</li> <li>4. Retain beach berm and modify to allow discharge to Soldier Bay via box culvert</li> <li>5. Retain Pond 8E (expand and deepen); consolidate sediment in Pond 8W</li> <li>6. Remove dam, spillway and cribwall</li> </ol>	Removes dam, spillway and cribwall. Retains stabilized north wall.	Ponds 6, 7 and 8, and soil/groundwater in/along swale and wetland	Could improve & maintain existing beneficial uses.	Provided as freshwater wetland, and possible stream channel restoration.	<ol style="list-style-type: none"> <li>1. Remediation completed for Ponds 6 and 7 and in/along swale and wetland areas (as needed)</li> <li>2. Pond 8E spillway constructed</li> <li>3. Storm water rerouted to OU-E lowland wetland and out through beach berm box culvert</li> <li>4. Pond 8 sediment remediated and Pond 8W closed</li> <li>5. Pond 8E retained</li> <li>6. Dam spillway and cribwall removed; regrading completed</li> <li>7. Mitigation monitoring of OU-E lowland wetland and swale ongoing.</li> </ol>	<ol style="list-style-type: none"> <li>1. Daylight Maple and/or Alder Creek drainage (if desired),</li> <li>2. Construct access road over daylighted creek(s)</li> <li>3. Remove beach berm (if desired)</li> <li>4. Develop coastal trail alignment.</li> </ol>	<ol style="list-style-type: none"> <li>1. Pond 8E and north wall (vegetation and sediment)</li> <li>2. Pond 8E spillway (operation, clearance)</li> <li>3. Beach berm (vegetation) box culvert (clearance)</li> <li>4. Beach berm (trail maintenance) (vegetation)</li> <li>5. Restored stream channel (vegetation)</li> <li>6. OU-E wetland (vegetation, trash etc).</li> </ol>
Alternative 2: Pond 8 Expansion (Figure 2)	<ol style="list-style-type: none"> <li>1. Remediate Pond 6, Pond 7, OU-E soil a/o groundwater (as needed)</li> <li>7. Stabilize north wall</li> <li>2. Expand Pond 8E to encompass Pond 5</li> <li>3. Reroute Alder Creek flow to Pond 5</li> <li>4. Channel surface water from Pond 8E via spillway and vegetated swale to (2 -3 acre) freshwater wetland in OU-E lowland</li> <li>5. Retain beach berm and modify to allow discharge to Soldier Bay via box culvert.</li> <li>6. Consolidate Pond 8E sediment in Pond 8W and close</li> <li>7. Remove dam, spillway, cribwall and regrade</li> </ol>	Removes dam, spillway and cribwall. Retains stabilized north wall.	Ponds 6 and 7 and Pond 8E; soil/groundwater along swale and wetland, and potentially between P5 and P8E	Maintains or enhances via Pond 8E expansion and aquatic features (wetland and vegetated swale).	Provided through pond expansion, some OU-E lowland wetland, and possible stream channel restoration.	<ol style="list-style-type: none"> <li>1. Alder creek rerouted to Pond 5 via culvert</li> <li>8. Remediation completed for Ponds 6 and 7, in/along swale and wetland areas, and between Ponds 5 and 8E (as needed)</li> <li>2. Pond 8 expanded into Pond 5</li> <li>3. Spillway and swale constructed from Pond 8E/5 to OU-E lowland wetland</li> <li>4. Box culvert installed in beach berm</li> <li>5. Pond 8 sediment remediated and Pond 8W closed</li> <li>6. Dam spillway and cribwall removed; regrading completed</li> <li>7. Mitigation monitoring of OU-E lowland wetland ongoing (Pond 6 and 7 mitigation)</li> </ol>	<ol style="list-style-type: none"> <li>1. Daylight Maple and/or Alder Creek drainage (if desired)</li> <li>2. Reroute road through upland OU-E to east of Pond 5</li> <li>3. Remove beach berm (if desired)</li> <li>4. Develop Coastal Trail alignment</li> </ol>	<ol style="list-style-type: none"> <li>1. Pond 8E/5 vegetation and sediment</li> <li>2. Beach berm (vegetation, stability) and beach berm culvert (clearance, maintenance)</li> <li>3. Beach berm (trail maintenance)</li> <li>4. OU-E vegetated swale and aquatic feature (vegetation, trash, etc)</li> </ol>

Preliminary Mill Pond Complex Alternatives Matrix  
 October 20, 2010 Fort Bragg City Council & Planning Commission Work Session

MPC Preliminary Alternatives Matrix		Georgia-Pacific Goals		Project Constraints		Project Components Completed by 2015	Remaining Alternative Components <sup>3</sup>	Long-Term O&M <sup>4</sup>
Alternative (Figure Reference)	Alternative Description <sup>1,2</sup>	Dam Safety	Remediation <sup>2</sup>	Surface Water Diversion	Mitigation			
Alternative 3: Pond 8 Closure with Maple Creek Daylight (Figure 3)	1. Remediate Pond 6 and 7, OU-E soil a/o groundwater (as needed) 2. Modify Maple Creek riparian area with flow control structure to create seasonal flood plain. 3. Daylight Maple Creek to freshwater wetland in OU-E lowland area 4. Reroute Alder Creek drainage to Pond 5 5. Route flow from Pond 5 to Maple Creek channel via pipe 6. Retain beach berm and modify to allow discharge to Soldier Bay via box culvert 7. Close Pond 8 (consolidate sediment in place) 8. Remove dam, spillway, cribwall and north wall and regrade	Removes dam, spillway, cribwall and north wall.	Ponds 6, 7, and 8; soil and/or groundwater along daylighted Maple Creek and OU-E lowland wetland.	Maintained via Maple Creek seasonal flood plain, daylighted Maple Creek channel and OU-E aquatic feature.	May be met via Maple Creek seasonal flood plain, daylighting creek channel(s) and OU-E wetland, some mitigation may be required elsewhere.	1. Maple Creek flow control structure and seasonal flood plain constructed. 2. Rerouting of Alder Creek via culvert, and construction of Pond 5 culvert to downstream 3. Remediation completed as needed in OU-E lowland area and daylighted creek channel(s) 4. Maple Creek daylighted to OU-E lowland restored streambed 5. Culvert installed in beach berm 6. Pond 8 remediated and closed 7. Dam spillway and cribwall removed; regrading completed 8. Mitigation monitoring of OU-E lowland wetland 9. Other on-site mitigation for Pond 8 habitat loss conducted and monitoring on-going (if needed)	1. Daylight Alder Creek (if desired) 2. Remove beach berm (if desired) 3. Develop Coastal Trail alignment 4. Reroute road or construct bridge over daylighted streams in upland (if needed)	1. Maple Creek seasonal pond (vegetation, trash, etc) 2. Pond 5 (vegetation, trash etc.) 3. Geomorphic control structure for Maple Creek (clearance) 4. Restored channel(s) (vegetation, trash, erosion control, etc) 5. OU-E wetland (vegetation, trash, etc.) 6. Beach berm culvert (clearance) 7. Beach berm trail maintenance 8. Bridge maintenance
Alternative 4: Pond 8/Pond5 Closure with Maple Creek Daylight (Figure 4)	1. Remediate Pond 6, Pond 7, OU-E soil a/o groundwater (as needed) 2. Modify Maple Creek riparian area with flow control structure to create seasonal flood plain 3. Daylight Maple Creek to freshwater wetland in OU-E lowland area 4. Daylight or pipe Alder Creek drainage to Maple Creek channel and OU-E lowland 5. Relocate Pond 5 6. Retain beach berm and modify to allow discharge via box culvert 7. Close Pond 8 (consolidate sediment in place) 8. Remove dam, spillway, cribwall and north wall and regrade	Removes dam, spillway, cribwall and north wall.	Ponds 6, 7, and 8; soil and/or groundwater along daylighted Maple Creek and OU-E lowland wetland.	Maintained via Maple Creek catch basin, daylighted Maple Creek channel and OU-E aquatic feature.	May be met via Maple Creek catch basin, daylighting of stream(s) and OU-E wetland, some mitigation may be required elsewhere. Relocation/ Restoration of Pond 5	1. Maple Creek flow control structure and seasonal pond constructed 2. Rerouting of Alder Creek via culvert to Maple Creek channel 3. Maple Creek daylighted to OU-E lowland restored channel 4. Remediation completed as needed in OU-E lowland area and daylighted creek channel(s) 5. Box culvert installed in beach berm 6. Pond 5 closed 7. Pond 8 remediated and closed 8. Dam spillway and cribwall removed; regrading completed 9. Mitigation monitoring of OU-E lowland wetland 10. Other on-site mitigation for Pond 8 habitat loss conducted and monitoring on-going (if needed)	1. Daylight Alder Creek (if desired) 2. Remove beach berm (if desired) 3. Develop Coastal Trail alignment 4. Reroute road or construct bridge over daylighted streams in upland (if needed)	1. Maple Creek seasonal flood plain (vegetation, trash, etc) 2. Restored channels (vegetation, trash, erosion control, etc) 3. OU-E wetlands (vegetation, trash, etc.) 4. Beach berm culvert (clearance) 5. Beach berm trail maintenance 6. Bridge maintenance

FOOTNOTES

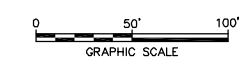
- <sup>1</sup> The Alternatives description is a generalized listing of the alternative components depicted in the associated figures, in the approximate sequence in which they would be implemented.
- <sup>2</sup> The remediation described per alternative summarizes potential remediation that may be required, assuming impacted soil, sediment and/or groundwater are present. However, site characterization and remedial investigations are ongoing – actual remediation needs will be evaluated in forthcoming remedial investigation and feasibility studies.
- <sup>3</sup> Remaining alternative components are components that may be completed after 2015 or are further options that could be considered for future implementation.
- <sup>4</sup> O&M Operations and Maintenance

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 XREFS: PROJECTNAME: 1  
 IMAGES: 66725X07 66116X00



LEGEND:	
	OU-E LOWLAND
	LOW MARSH
	HIGH MARSH
	FOREBAY/PONDED AREAS
	CENTER CHANNEL
	CONCRETE
	STABILIZED FILL

NOTE:  
 CULVERT WIDTHS ARE NOT TO SCALE

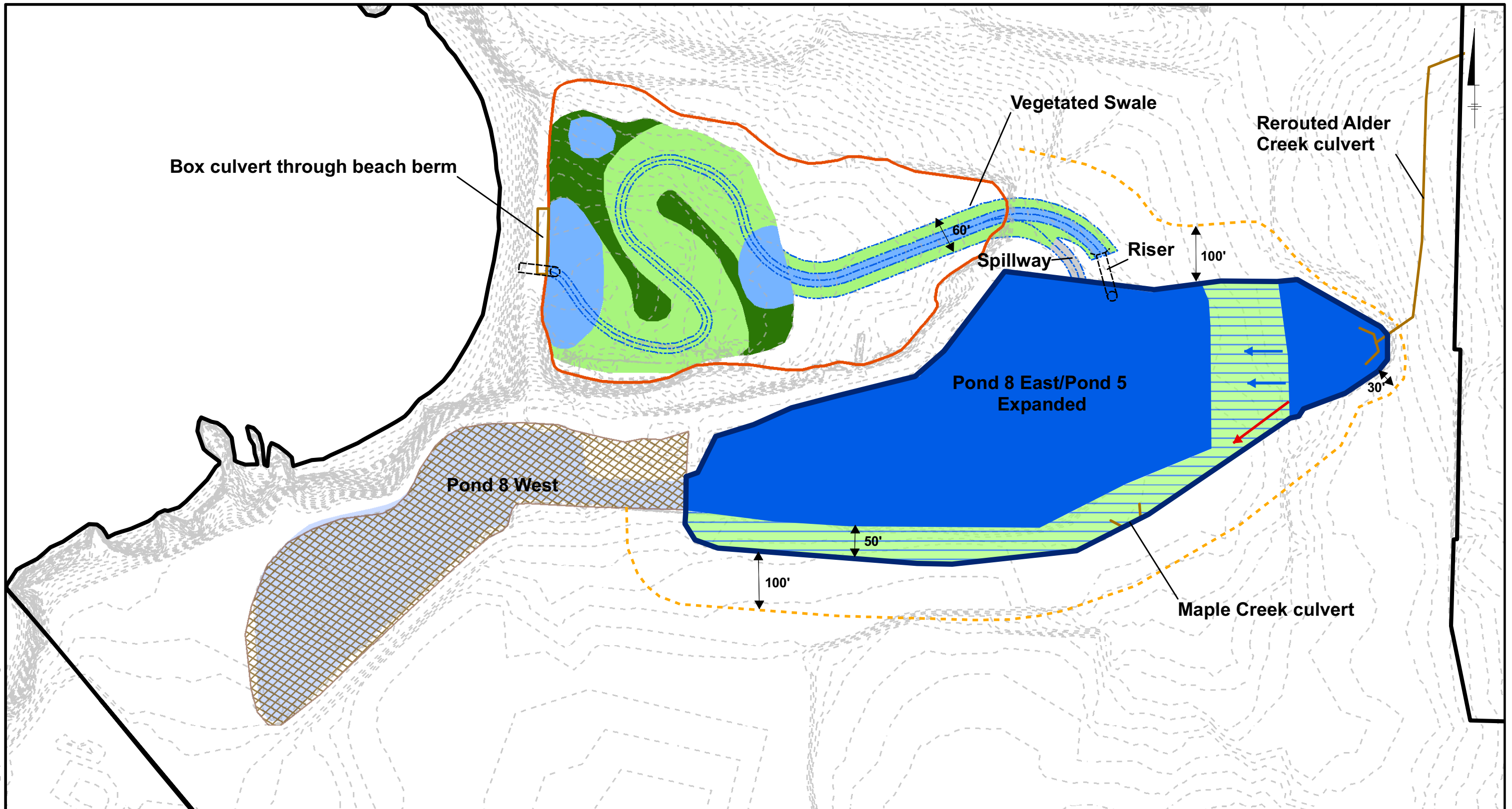


FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY  
 FORT BRAGG, CALIFORNIA  
**MILL POND COMPLEX ALTERNATIVES ASSESSMENT**












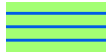



**PRELIMINARY ALTERNATIVE 1 POND 8  
 MODIFICATION WITH VEGETATED  
 SWALE/WETLAND**

FIGURE  
**1**

CITY: HR\_DIV/GROUP: GIS\_DB:BG  
 Project # 66116 task 10  
 I:\FortBragg\MXD\MillPondDam\091710\Fig2\_Alt2Pond8\_Expansion.mxd - 10/15/2010 @ 11:38:52 AM



**Legend**

- |  |  |   |  |
|--|--|---|--|
|  STABILIZED FILL            |  LOW MARSH            |  CONCRETE              |  TOPOGRAPHIC CONTOURS |
|  POND 8/5 EXPANDED BOUNDARY |  HIGH MARSH           |  OU-E LOWLAND BOUNDARY |  SITE BOUNDARY        |
|  OPEN WATER                 |  FOREBAY/PONDED AREAS |  ESHA POTENTIAL BUFFER |  |
|  |  SHALLOW WETLAND      |  CULVERT               |  |
|  |  |  HIGH WATER FLOW PATH  |  |
|  |  |  LOW WATER FLOW PATH   |  |



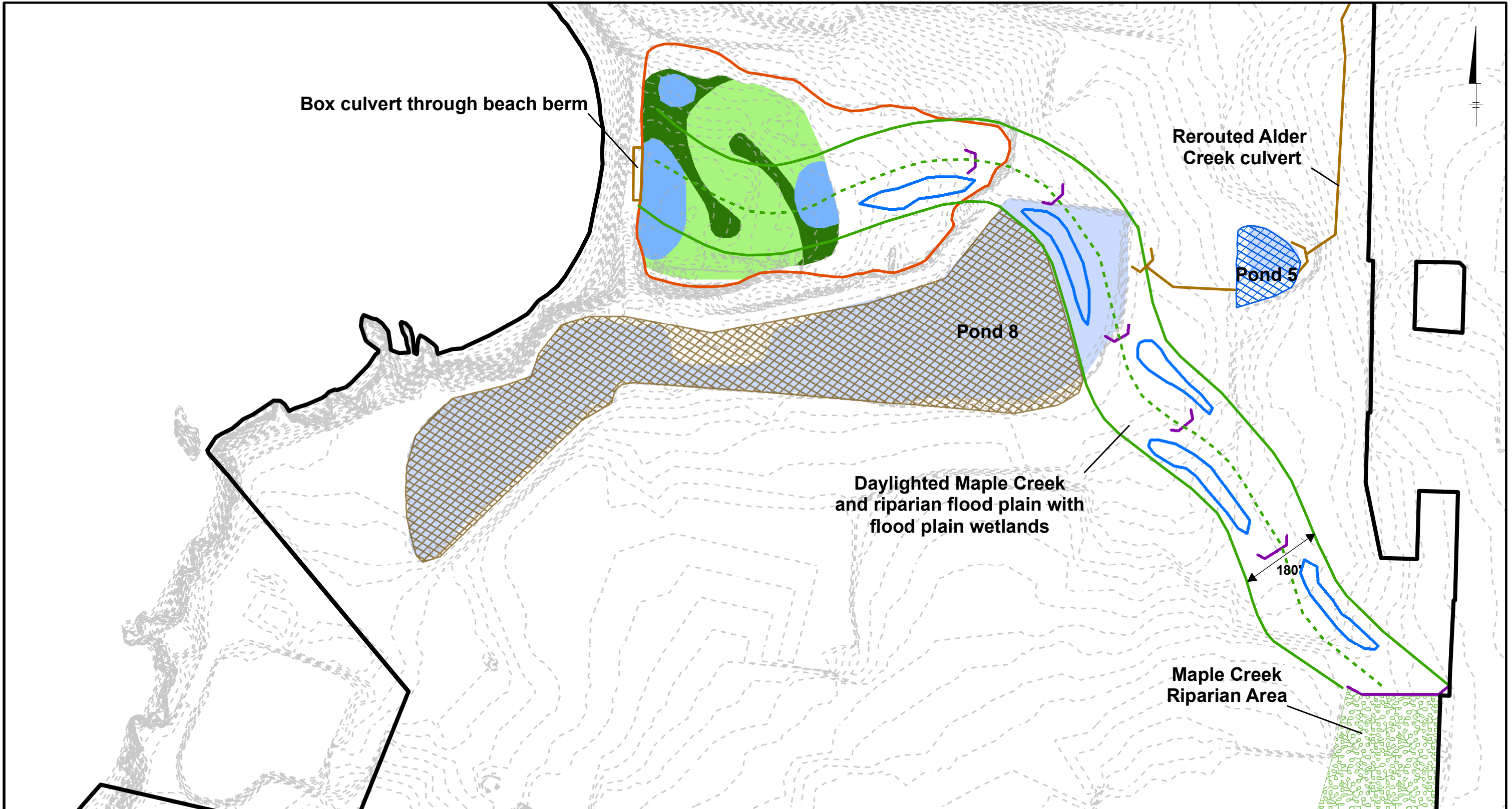
FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY  
 FORT BRAGG, CALIFORNIA  
 MILL POND COMPLEX ALTERNATIVES ASSESSMENT

PRELIMINARY ALTERNATIVE 2  
 POND 8 EXPANSION

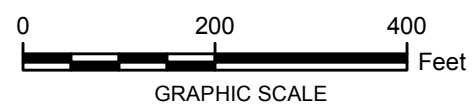


FIGURE 2

CITY: HR\_DIV/GROUP: GIS\_DB:BG  
 Project # 66116 task 10  
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Legend	
	OPEN POND
	STABILIZED FILL
	MAPLE CREEK RIPARIAN AREA
	EXISTING POND
	LOW MARSH
	HIGH MARSH
	FOREBAY/PONDED AREAS
	SEASONAL FLOOD PLAIN WETLANDS
	OU-E LOWLAND BOUNDARY
	CULVERT
	MAPLE CREEK AND RIPARIAN FLOOD PLAIN
	GEOMORPHIC FLOW CONTROL STRUCTURES
	TOPOGRAPHIC CONTOURS
	SITE BOUNDARY



FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY  
 FORT BRAGG, CALIFORNIA

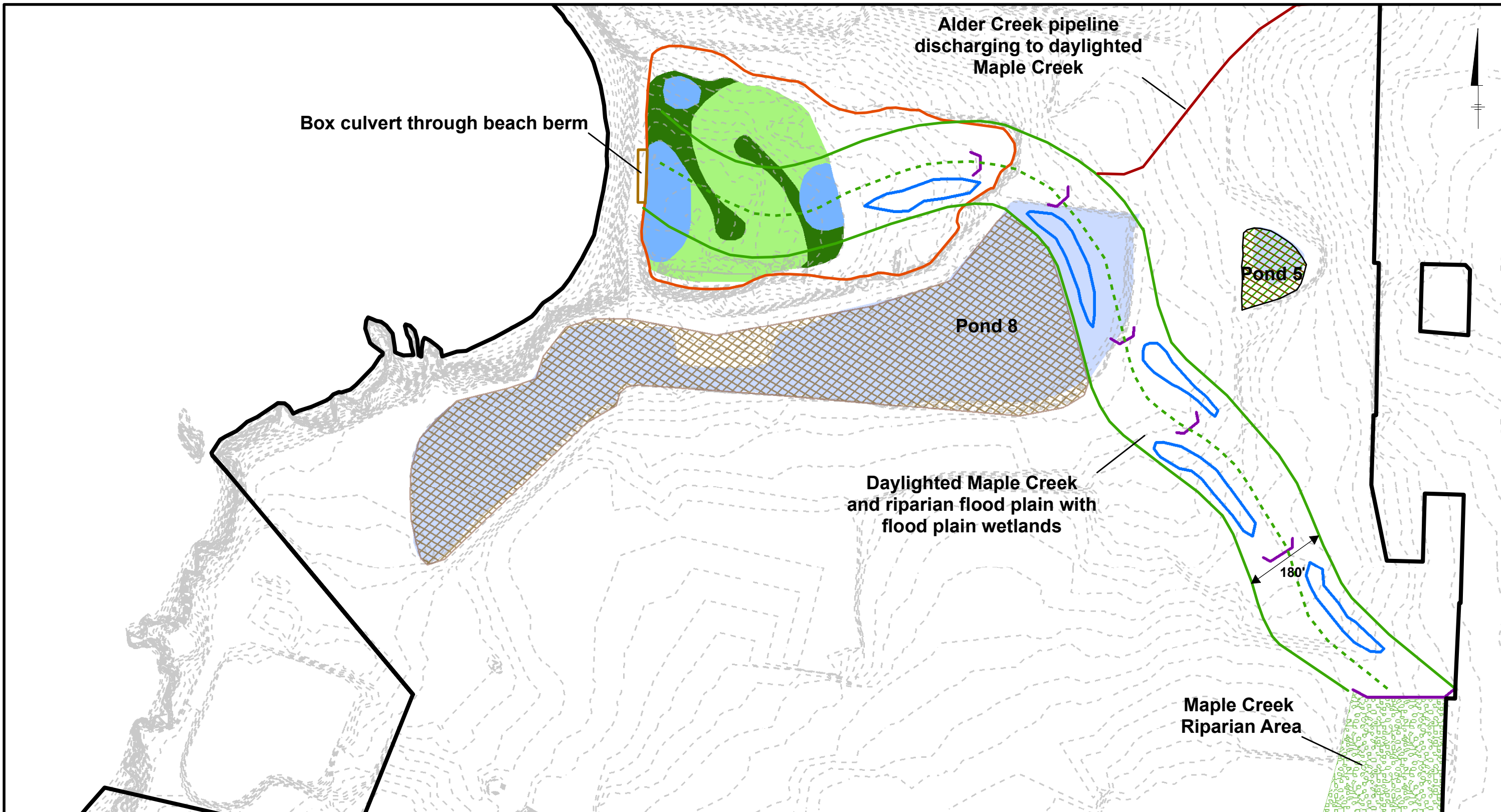
MILL POND COMPLEX ALTERNATIVES ASSESSMENT
















**PRELIMINARY ALTERNATIVE 3 POND 8  
 CLOSURE WITH MAPLE CREEK DAYLIGHT**

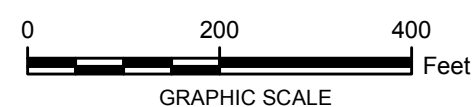
FIGURE 3



CITY: HR\_DIV/GROUP: GIS\_DB:BG  
 Project # 66116 task 10  
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<b>Legend</b>			
	CLOSED POND		LOW MARSH
	STABILIZED FILL		HIGH MARSH
	MAPLE CREEK RIPARIAN AREA		FOREBAY/PONDED AREAS
	EXISTING POND		SEASONAL FLOOD PLAIN WETLANDS
		OU-E LOWLAND BOUNDARY	
		ALDER CREEK PIPELINE	GEOMORPHIC FLOW CONTROL STRUCTURES
		BOX CULVERT	
		MAPLE CREEK AND RIPARIAN FLOOD PLAIN	TOPOGRAPHIC CONTOURS
		SITE BOUNDARY	



FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY  
 FORT BRAGG, CALIFORNIA

MILL POND COMPLEX ALTERNATIVES ASSESSMENT

**PRELIMINARY ALTERNATIVE 4 POND8/POND5  
 CLOSURE WITH MAPLE CREEK DAYLIGHT**




FIGURE 4



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**Overview**



- Mill Pond Complex overview
- Planning and implementation processes
- Project goals
- Principal project components
- Conceptual alternatives
- Next steps and additional technical requirements

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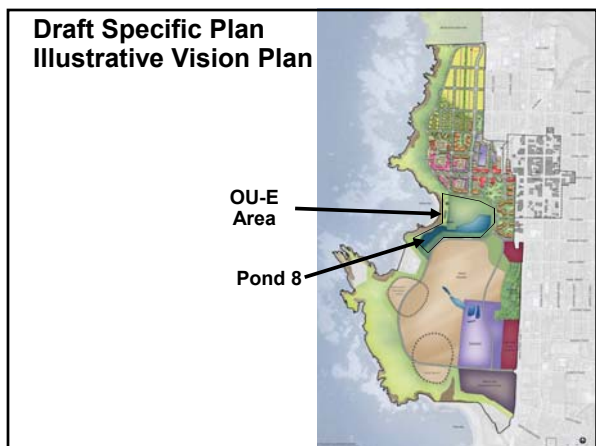
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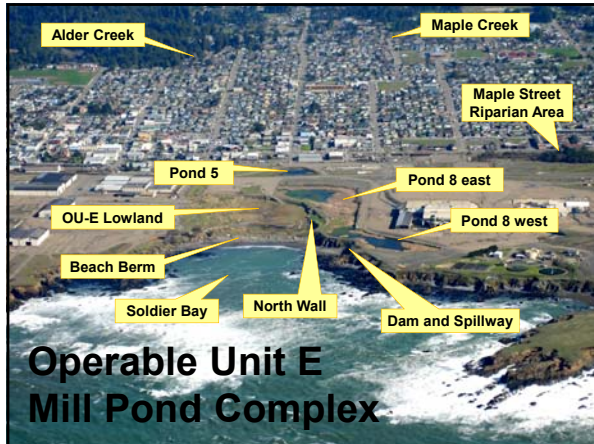
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**Planning and Implementation Process**

**Overarching Goals:**

- Identify preferred conceptual alternative for the Mill Pond Complex
- Meet regulatory requirements
- Achieve City and community goals
- Achieve Georgia-Pacific goals



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**Feedback from July 2010 Community Meeting:**

- Provide more information on other options
- Longer-term and more inclusive planning process



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## Planning Framework

- Phased approach to implementation
- Define preferred alternative for CEQA
- Develop a site restoration and mitigation approach that considers entire OU-E area
- Investigation and remedial actions
- Consistent evaluation




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## Specific Objectives to Achieve Goals

Parameter	Objectives for the Mill Pond Complex
Dam Safety	➤ DSOD requirement to remove dam by 2015
Surface Water	➤ Reroute City and site's surface and storm water ➤ Maintain water quality at current levels
Remediation Process	➤ Implement interim actions (Ponds 6 & 7) ➤ Design and implement Pond 8 remediation ➤ Design and implement OU-E soil remediation
Restoration / Mitigation	➤ Establish integrated resource restoration plan
Feasibility	➤ Regulatory, technical, cost and timing
Aesthetics	➤ Enhance aesthetics
Maintenance	➤ Minimize long-term maintenance costs
Public Access	➤ Provide easy access; complete the coastal trail
Sustainability	➤ Plan for the long-term vision

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## Participating Agencies

Agency	Role
City of Fort Bragg	Coastal Development Permitting, CEQA Lead Agency
Department of Safety of Dams	Dam safety, CEQA Responsible Agency
Dept of Toxic Substances Control	Site remediation, CEQA Responsible Agency
Regional Water Quality Control Board	Water resource protection, stormwater management, CEQA Responsible Agency
Coastal Commission	Coastal resources management, CEQA Responsible Agency
Department of Fish and Game	Section 1600 permitting, CEQA Responsible Agency
US Army Corps of Engineers	Section 404 Permitting
US Fish and Wildlife Service	Ecological resources support

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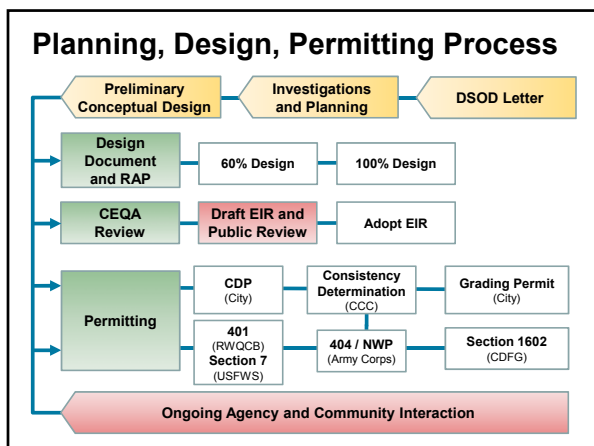
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### Project Timeline through 2015

	2010	2011	2012	2013	2014	2015
<b>Dam Safety</b>	Conceptual design	DSOD Plan (January)			Dam removal and regrading	
<b>Remediation</b>	OU-E RI	RI/RA, FS and RAP Engineering	Pond 6 & 7 OU-E upland	Pond 8 remediation		
<b>Surface water rerouting / Restoration</b>	Conceptual design	Project Description Engineering Design	Reroute surface water	Monitoring		
<b>CEQA</b>	Define preferred alternative	Draft EIR Public review Final EIR				
<b>Permitting</b>		Prepare permit applications and obtain permits				
<b>Restoration &amp; Mitigation</b>	Conceptual Design MOU	Restoration and Mitigation Design/Plan		Restoration and Mitigation implementation ▶		
<b>MPC Long-term Vision</b>	Conceptual design	Project description		MPC long-term vision implementation ▶		

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### Principal Components for Development of Mill Pond Complex Alternatives

- Alder and Maple creeks
- North wall, dam, spillway & cribwall
- Pond 8
- Pond 5
- OU-E lowland area
- Beach berm

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### Alder and Maple Creeks

- Defined as waters of the State
- Carry City storm water runoff
- Contribute approximately 70% of the flow to Pond 8
- Drainages respond quickly to rainfall events



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### Alder and Maple Creeks

#### Possible Actions:

- Retain as subsurface pipes
- Daylight either or both creeks
- Enhance Maple Creek riparian area



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### Alder and Maple Creeks

#### Feasibility Considerations

- Restore approximate historic stream channel
- Could generate 600 to 3,200 feet of stream channel
- Create riparian corridor with floodplain wetlands
- Water quality improvement
- Wildlife corridor and riparian habitat
- High aesthetic value
- Extensive soil excavation
- Additional remediation may be necessary to daylight Alder Creek
- May require relatively broad channel
- Need to consider bridges and traffic flow

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### North Wall, Dam, Spillway & Cribwall

#### Dam Maintenance

- Dam face and cribwall interim stabilization by 2011

#### Dam Removal

- Spillway and cribwall removal and regrading by 2015

#### North Wall

- Stabilization
- Regrading near Pond 7
- Removal and regrading



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### Pond 8

- Jurisdictional wetland, ESHA and waters of the State
- Approximately 7.4 acres
- Volume less than 20 acre-feet
- Contains 40,000 to 60,000 cubic yards of mildly impacted sediment
- Sediment must be remediated before the dam and cribwall can be removed in 2015



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### Pond 8

#### Possible Actions:

- Sediment Remediation
  - Sediment stabilization
  - Dig and haul
- Partial closure
  - Retain Pond 8 East
  - Close Pond 8 West
- Full closure



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### Pond 5

- Former Pudding Creek intake pond
- Defined as an ESHA, freshwater pond/wetland
- Does not require remediation
- Captures shallow groundwater and surface runoff from local area
- Approximately 0.58 acres

#### Possible Actions:

- Retain as existing ESHA
- Connect with Pond 8
- Relocate and mitigate/restore
- Connect with daylighted creeks



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### OU-E Lowland Area

- Approximately 8.7 acres
- Elevations range from 37 to 16 feet above mean sea level
- Includes Ponds 6 and 7, North Pond and wetland seeps
- Jurisdictional wetlands and waters of the State
- Shallow groundwater
- Coastal Act ESHAs
- 7 temporary soil caps
- Ongoing OU-E investigation
- Ponds 6 and 7 require remediation



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### OU-E Investigation

#### Soil results:

- TPHd concentrations appear elevated in some areas; forensics suggest source is largely natural organic material (bark, sawdust) and not petroleum
- Localized areas with elevated lead and/or PAH levels
- Two elevated dioxin/furan detections east of former Powerhouse

#### Sediment results:

- Elevated dioxins/furans in Ponds 6 and 7

#### Groundwater results:

- Concentrations in monitoring well samples are generally below screening levels

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### OU-E Lowland Area

#### Possible Actions for Storm Water Rerouting:

- Freshwater wetland
- Stream/open channel
  - Vegetated swale
  - Creek channel
  - Open channel
- Pipe
- Estuary
  - Shallow
  - Deep inlet
- Lake



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### OU-E Lowland Area

#### Freshwater Wetland Feasibility Considerations

- Already contains existing freshwater wetlands
- Acreage available for approximate 3- to 4-acre wetland
- Suitable hydrology
- Shallow groundwater table
- Retain beach berm
- Discharge via standpipe outlet or box culvert

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### OU-E Lowland Area

#### Stream Channel Feasibility Considerations

- No existing channel but acreage and topographic conditions are suitable to create a stream channel and floodplain
- Could incorporate perennial and/or seasonal floodplain wetlands
- Could create a vegetated swale
- Retain beach berm and discharge via box culvert to Soldier Bay
- Shallow groundwater would likely discharge to channel continuously

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### OU-E Lowland Area

#### Estuary Feasibility Considerations

- Require extensive excavation
  - Must dig 20 to 30 feet deep to create the inlet at sea level
  - 150,000 cubic yards for shallow estuary
  - 500,000 cubic yards for deep inlet estuary
- Steep transition for Alder and Maple Creek
- Partial or full tidal flux and wave action
- May conflict with goal to remove DSOD jurisdictional dam designation for Pond 8
- Relatively high long-term maintenance needs
- Estuary may result in less stable and lower quality habitat than a freshwater wetland
- Limited ecological value for migratory fish

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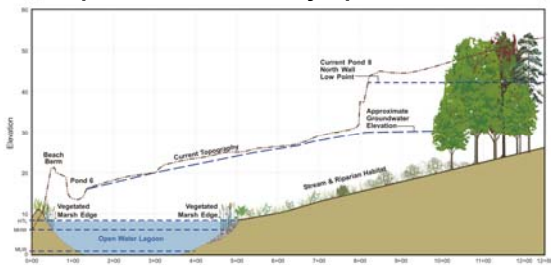
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### OU-E Lowland Area

#### Conceptual Shallow Estuary Option



Vertical exaggeration 10:1  
 Construction would require excavation of more than 150,000 cubic yards of soil

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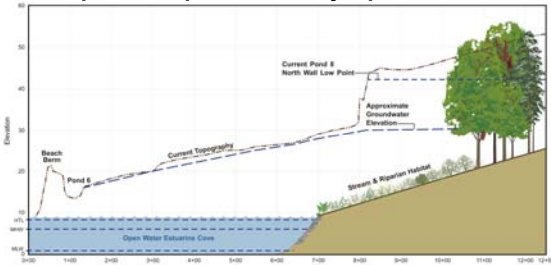
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### OU-E Lowland Area

#### Conceptual Deep Inlet Estuary Option



Vertical exaggeration 10:1  
 Construction would require excavation of more than 500,000 cubic yards of soil

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### OU-E Lowland Area

#### Lake Feasibility Considerations

- Acreage available for 4 to 6 acre lake with wetland
- May conflict with goal to remove DSOD jurisdictional dam designation for Pond 8
- Requires extensive excavation and building up the beach berm and standpipe outfall
- Relatively high long-term maintenance needs
- Modest ecological value

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### Beach Berm

- Currently an earthen berm
  - Inboard elevation: 16 ft
  - Top of berm: 21 ft
  - High tide line: 8.3 ft
- Rip-rap on outboard face
- Two existing outfalls



#### Possible Actions:

- Stand pipe outfall (two 36-inch pipes, with a pond on the inboard side of the berm)
- Box culvert set into the berm
- Open channel
- Removal

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### Beach Berm

#### Feasibility Considerations

- Removal may result in loss of beach and erosion of OU-E
- Climate change (rising sea level) may affect shoreline conditions
- Geotechnical analysis of beach berm will be required based on intended use
- Consider aesthetic improvements to armored surfaces
- Beach berm facilitates coastal trail and public access to the beach

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**Aquatic Habitat Planning and Design Considerations**

**Manage surface water volume**

- 100 year 24-hour event = flow of 450 cfs (cubic feet/second)
- Stable and appropriately sized aquatic habitat features

**Sustain water quality beneficial use**

- Define current water quality improvement performance
- Define at varied flow conditions

**Restoration and mitigation**

- Avoid piecemeal and isolated ESHA units
- Achieve regulatory requirements for the Coastal Commission, RWQCB, DFG, DTSC and City of Fort Bragg

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**Aquatic Habitat Planning and Design Considerations**

**Off-site MTBE plume**

- MTBE (a fuel additive) in shallow groundwater may affect daylighting of Alder Creek

**Remediation**

- Future land use and restoration options potentially affect potential ecological and human health exposures
- Risk evaluation will help determine restoration feasibility

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**Aquatic Habitat Planning and Design Considerations**

**Topography**

- Water management and erosion control
- Avoid steep channels and complicated structures

**Geotechnical Considerations**

- Beach berm and North Wall

**Aesthetic Considerations**

- Overall landscape and project components

**Cost**

- Construction and long-term maintenance

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### Conceptual Alternatives to Date

1. Pond 8 modification and vegetated swale complex
2. Pond 8 expansion and freshwater wetland
3. Pond 8 closure and Maple Creek daylighting
4. Pond 8 & 5 closure and Maple Creek daylighting

**All preliminary alternatives:**

- Remove the cribwall and dam
- Provide OU-E remediation
- Depend on a mix of in-kind and other ESHA mitigation
- Provide aesthetically pleasing aquatic habitat features
- Require phased construction approach over several years

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### Preliminary Alternative 1

Pond 8 Modification and Vegetated Swale Complex




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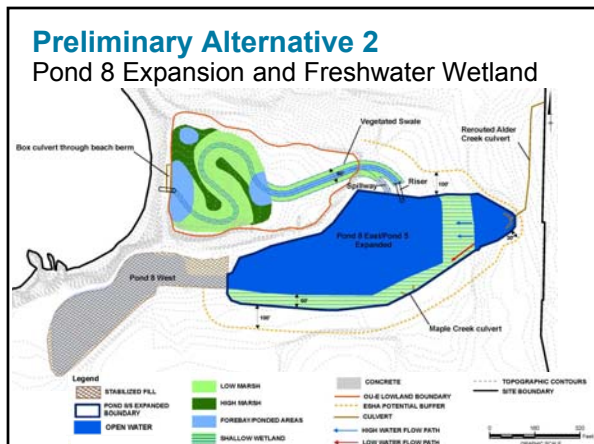
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### Preliminary Alternative 2

Pond 8 Expansion and Freshwater Wetland




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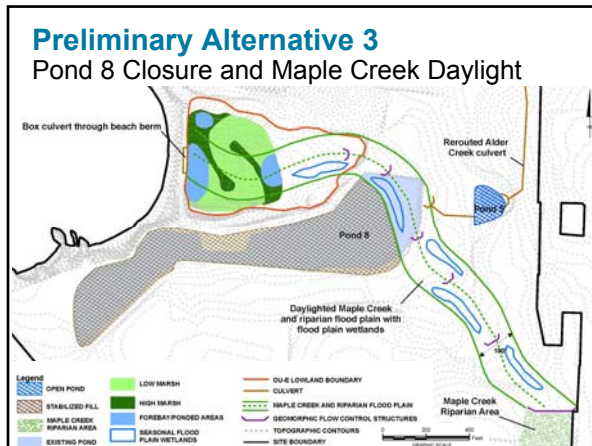
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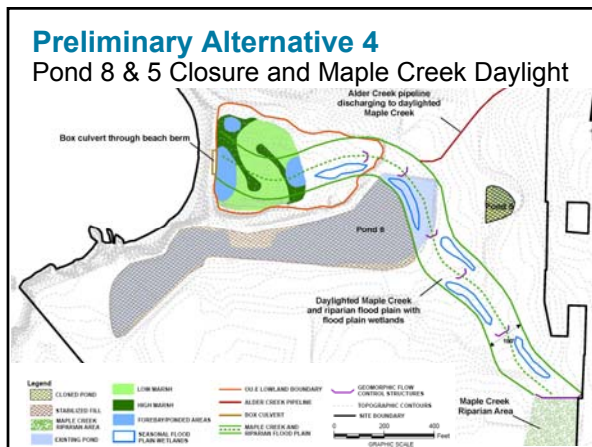
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Imagine the result

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